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FOR ADMINISTRATIVE USE

MINUTES

of the

NATIONAL COORDINATING COMMITTEE

National Cooperative Program on the Introduction,
Screening and Preservation of Plant Material
(New Crops Program)

May 12-13, 1953, Denver, Colorado

Covering the following Projects authorized

under the

Research and Marketing Act of 1946

NC-7 North Central Region Cooperating State Experiment Stations
S -9 Southern Region Cooperating State Experiment Stations
W- 6 Western Region Cooperating State Experiment Stations
NE-9 Northeastern Region Cooperating State Experiment Stations
IR-1 Inter-Regional Cooperative Potato Introduction Station
b-11-5 Division of Plant Exploration and Introduction, Bureau of Plant
Industry, Soils, and Agricultural Engineering

and
associated with

The Soil Conservation Service
The Forest Service



Chairman: R. D. Lewis, Director, Texas Agricultural Experiment Station
Secretary: C. O. Erlanson, Head, Division of Plant Exploration and
Introduction

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Representatives Present

North Central Region, Regional Project NC-7

Dean W. V. Lambert, Administrative Adviser
D. C. Smith, Chairman, Regional Technical Committee
F. S. Howlett, Technical Committee Representative
M. M. Hoover, Regional Coordinator

Southern Region, Regional Project S-9

Director R. D. Lewis, Administrative Adviser
O. E. Sell, Chairman, Regional Technical Committee
Edwin James, Regional Coordinator

Western Region, Regional Project W-6

Director M. T. Buchanan, Administrative Adviser*
F. C. Elliott, Chairman, Regional Technical Committee
D. W. Robertson, Chairman, Standing Committee on National Seed Storage
L. A. Mullen, Regional Coordinator

Northeastern Region, Regional Project NE-9

Director A. J. Heinicke, Administrative Adviser
J. L. Creech, Regional Coordinator

Inter-Regional Potato Introduction Station, Project IR-1

Dean W. V. Lambert, Administrative Adviser
F. A. Krantz, Chairman, Inter-Regional Technical Committee
R. W. Hougas, Coordinator

Division of Plant Exploration and Introduction - Federal Project b-11-5

C. O. Erlanson, Head of Division
W. H. Hodge, Project Leader b-11-5

Others Present

E. Kostal, Division of Plant Quarantines, Bureau of Entomology and Plant Quarantine
C. G. Marshall, Nursery Division, Soil Conservation Service
J. A. Downs, Nursery Division, Soil Conservation Service

* Director J. E. Kraus of Idaho has recently been appointed Administrative Adviser for W-6.

Denver, Colorado - May 12-13, 1953

The meeting was called to order at 9:00 a.m., May 12, by Chairman Lewis. Minutes of the previous meeting held at Chicago, Ill., May 17-18, 1951, were approved as mimeographed and distributed to all representatives.

Review of Functions of the National Committee

The relationships, organization and functions of the National Committee are described as given in the Minutes, pages 15-19, of the First Meeting of the National Coordinating and Advisory Committee held at Ames, Iowa, on April 19-20, 1949. Chairman Lewis reviewed this statement in respect to present day operations and responsibilities as follows:

"The approved report of a subcommittee is quoted in full because of its possible interrelations with other projects and its definitions of functions and responsibilities.

The functions of the regional projects and their cooperative relationships with the Division of Plant Exploration and Introduction of the BPISAE are many and varied. Certain of these functions are the responsibility of the Bureau, others rest within the regions, and certain responsibilities may be more advantageously discharged through an inter-regional or national program.

To more clearly define the functions of a National Coordinating Committee, it first becomes necessary to re-state the functions and responsibility of the Federal Project (b-11-5), of the separate regional projects and those functions which may become cooperative between two or more regions.

Functions of the Division of Plant Exploration and Introduction

The functions of exploration and introduction are the prime responsibility of the Division of Plant Exploration and Introduction of the BPISAE through the Federal Project (b-11-5).

1. Plant Exploration

Refer to Objective 1 of Regional Project outlines. Suggestions for explorations and for materials to be introduced should be summarized; ranked for priority, and submitted by the chairman of the regional technical committee to the head of the Division of Plant Exploration and Introduction. Final priorities for plant exploration will be made by the National Committee.

2. Introductions

Such materials as may be received in this program from foreign countries must come through the Division of Plant Exploration and Introduction in accordance with plant quarantine regulations. Materials introduced directly to states to be included in this program must be cleared through the Division of Plant Exploration and Introduction before coming to the primary station within the region.

Functions of the Regional Projects

The functions delegated largely to the regional primary or secondary stations include the following:

1. Preliminary Evaluation

See Objective 2 of regional projects statements. The material submitted to the regions from the Division of Plant Exploration and Introduction will be given sufficient preliminary evaluation so that interested state stations may be in position to determine if such materials may have potential value in their research program.

2. Multiplication and Distribution

Sufficient seed or plant material should be multiplied at the primary or designated secondary stations to enable their distribution to interested state stations or cooperating agencies.

3. Further Evaluation

Such tests will be made by the state stations and cooperating agencies who shall provide the regional coordinator with a report of evaluation and performance.

4. Release of Proven Material to Seed and Plant Growers

Notification of intent to release and of proposed name or designation is to be filed with the primary station so as to effect simultaneous release and uniform naming in interested states. The policies of release, increase, and use shall be in accordance with those in effect within the states wherein the release is to be made.

5. Records

The systems and forms used in cataloging, evaluation, and recording data should be developed by and coordinated insofar as possible among the regional coordinators.

General Activities of Joint Responsibility

1. Preservation

See Objective 4 of the general program of preservation of germ plasm. No introduction is to be discarded by the regional primary station until cleared with the Division of Plant Exploration and Introduction. Regional Coordinators may consult a regional crops committee for retaining or discarding specific stocks of that crop. Lists of material eliminated must be reported to the Division of Plant Exploration and Introduction for record and national clearance.

2. Preparation of Reports

Reports on regional basis shall be made annually by the regional coordinator or the chairman of the regional technical committee by February 1, to summarize the results of preliminary trials. Sufficient copies shall be made available to the chairman of the regional technical committee or administrative adviser for transmission to station directors and technical committee members and copies forwarded to the Division of Plant Exploration and Introduction and to other cooperative Federal agencies. Annual reports of BPI Project b-11-5 will be made to the chairmen and administrative advisers by April 1.

Special joint reports on specific subjects may be prepared cooperatively between the regions and the Division of Plant Exploration and Introduction and other cooperating Federal agencies. Special reports also may be made cooperatively with or through specific crop technical committee reports.

From time to time Regional Publications, and/or National Publications on inter-regional cooperative research should be prepared jointly with the Division of Plant Exploration and Introduction. Every effort should be made to bring the results and activities of this program to interested research workers and to the public through the medium of research journals and popular news agencies and avenues.

3. Inter-Regional Cooperation on Special Sub-Projects

Under some circumstances it may be desirable and advantageous for two or more regions to cooperate in performing special phases of work outlined within each of the separate regional projects. Such conditions may arise when one of the regions is particularly well situated to perform such work for all regions, either because of climatic advantages, facilities, personnel or other reasons.

When such special phases of work, authorized under approved regional projects, become cooperative between two or more regions each of the cooperating regional projects, interested states or agencies or organizations should contribute an equitable share to the financing of the cooperative work, the amount to be suggested by the National Committee to the Cooperating Regional Association of Directors for recommendation and approval by the Committee of Nine where 9b3 funds are involved. The 9b3 funds to support the inter-regional phases of such research shall be allocated to the state in which the cooperative work is conducted.

The regional coordinator within the region where such cooperative work is located will be responsible for such work, and shall make the necessary reports to the regional coordinators in the cooperating regions and integrate the research on a national level.

4. Inter-Relations with Technical Committees for Specific Crop Projects

It is recognized that the technical committees for regional research on specific crops have definite interests in certain materials assembled in the Regional Primary Stations. These technical committees are requested to indicate what germ plasm should be sought, assembled, and evaluated through the cooperative plant exploration activities under the "New Plants" project. Following introduction and preliminary evaluation, the cooperation of specific crop or plant committees shall be encouraged in the further evaluation and maintenance of stocks. (Insofar as appropriations are allocated to the separate regional and federal specific crop projects on plant introduction, the agencies and leaders of specific crop projects are responsible for administering and reporting on the activities supported by these appropriations.) The technical committee for the "New Plants" projects will indicate to the technical specific crop committees the availability of introduced and increased plants of possible significance to the furtherance of specific crop improvement projects.

Some Functions of the National Coordinating and Advisory Committee

From the above outline of functions and responsibilities of the Federal Project, the regional projects, and cooperative projects between regions, it is evident that need for coordination exists to insure effective fulfillment of their separate functions. Such coordination may be most effectively accomplished through a National Committee.

The National Committee will consist of:

1. Representative from each of the four regions as follows:

- a. Administrative Adviser
- b. Regional Coordinator
- c. Chairman of Technical Committee
- d. Representative from the Technical Committee

2. Representatives from the U. S. Department of Agriculture:

- a. Chief, Bureau of Plant Industry, Soils, and Agricultural Engineering
- b. Head, Federal Project b-11-5, in the Division of Plant Exploration and Introduction
- c. Soil Conservation Service, Nursery Division
- d. Forest Service
- e. Bureau of Entomology and Plant Quarantine
- f. Bureau of Agricultural and Industrial Chemistry
- g. Office of Experiment Stations

3. Other organizations as may be designated by the National Committee.

The functions of this National Committee may be defined in part as follows:

1. Assist in determining priorities and areas for foreign plant exploration.
2. Establish policies on releases of materials introduced into the regions through this program.
3. Develop for presentation to the Regional Associations of Directors a suggested allocation of funds required for research cooperation between two or more regions on a special project.
4. Coordination of research. To insure that 9b3 funds are most effectively used, the National Committee suggests that copies of existing and proposed regional sub-projects be inter-changed among the regional coordinators and regional technical committees. Apparent needs and opportunities for strengthening the regional program, for inter-regional cooperation, as well as apparent cases of duplication, should be brought to the attention of the regional coordinators and to the National Committee.
5. Develop proposals and justifications for adequate regional and national financing of the "New Plants" projects.
6. Develop a suggested program for popular stories on the functions, operations, and accomplishments of the projects.
7. Establish policies relative to correlation of this program with other organizations such as F.A.O., the National Research Council, Arnold Arboretum, or other agencies as may be interested in this program.

An executive committee of the National Committee shall consist of the chairman of the National Committee, regional coordinators (or the chairman of the technical committee if there is no regional coordinator), and the leader of Federal Project b-11-5. The executive committee shall choose its own secretary."

Discussion which followed the review made by Director Lewis indicated that the program was progressing smoothly and in accord with the functions as laid down in the above report.

Report on the Activities of the Division of Plant
Exploration and Introduction including Project b-11-5

by

W. H. Hodge, Project Leader for b-11-5

The Division of Plant Exploration and Introduction, BPISAE, is the only unit in the Department of Agriculture primarily concerned with the exchange of living plant materials with other countries of the world. This Division has the responsibility in the federal government to obtain (through exploration or correspondence), record (through its published lists of introductions and permanent historical files), arrange for the inspection of (in cooperation with the Bureau of Entomology and Plant Quarantine), and place with plant breeders in the United States (primarily through the New Crops Projects), all living plant materials coming into the Department of Agriculture. Because it maintains quarantine facilities (at Glenn Dale, Maryland), it is given more latitude in what it can introduce than any other agency, either private or federal. Since its organization in 1898, some 220,000 introductions have passed through its hands to plantsmen in the federal crop divisions and at the state experiment stations. Due to its efforts during this period have come basic stocks extremely valuable both as new crops for the United States and as germ plasma to develop disease-resistant strains and new varieties with higher quality and production.

Division Activity other than but closely related to the National Cooperative Program

It is often assumed, even by those closely associated with this committee that the Division of Plant Exploration and Introduction is concerned only with the activities of the National Cooperative Program. Actually the Division directs other Work Projects involving plant introduction, testing, and maintenance of basic stocks. Each of these Work Projects is directed by a supervisory leader at Beltsville, as follows: the Introduction and Evaluation of Fruit and Vegetable Crops is headed by W. E. Whitehouse; Field Crops by H. L. Hyland; Specialty Crops by D. S. Correll; Plant Identification and Bibliographical Investigations by S. F. Blake; and The National Cooperative Program by W. H. Hodge. Certain of the current activities under each of these work projects may be of interest so I will describe samples, if briefly.

Although perhaps best known as a service agency, the Division also prosecutes basic research of its own principally in the field of horticulture and botany. In general horticultural research falls the field of new or little known crop plants, research which would be generally neglected in this country if not carried out by the Division. The development and improvement of the pistachio and jujube (at Chico, California), and cultural and evaluation studies on the Chinese Water-Chestnut and Oriental bamboos (at Savannah) are examples of such current research.

Another one of the Division's projects, cooperative at present only with other federal agencies, involves the exploration for, procurement, and preliminary evaluation of plants that are possible sources of the drug cortisone.

Some half dozen explorers have been in the field since the initiation of this work in 1949, and such possible sources as the genera Strophanthus, Agave, and Dioscorea as well as their close relatives have been thoroughly sampled. Several species of Dioscorea rich in diosgenin have been introduced and at present emphasis is being placed on large-scale testing of high-yielding strains under commercial conditions both here and in Puerto Rico.

The success of the Division's effort to find cortisone-yielding plants has resulted in the initiation of another cooperative project with the National Heart Institute to obtain and screen systematically alkaloid-yielding plants which might yield materials useful in the treatment of heart diseases. The majority of the plants being analyzed are being collected by our own field men.

Our efforts are not limited wholly to the United States but range throughout the hemisphere. For example, a growing recognition of the constant threat of the introduction of the Old World coffee rust, Hemileia, has awakened the interest of Latin American growers in the introduction of Old World coffee germ plasm carrying rust resistance. The Division is cooperating by having its Glenn Dale Station serve as an intermediate propagation and quarantine station for many coffee varieties at present moving between Old World and New World coffee experiment centers. Another example of our work with a tropical crop is the case of black pepper. Much interest in this condiment plant is developing in tropical America particularly because of the continued political unrest in Southeast Asia resulting in short supply in that producing region. During the past year we have introduced some of the best clones grown in India and these are now being increased at Glenn Dale preliminary to establishment in Puerto Rico.

When the Division lacks specialized facilities or staff for undertaking certain types of research it can contract with other agencies to perform the job. During the past two years, for example, the Georgia Tech Research Institute has made for us under contract a complete survey and study of chemurgic utilization materials and the needs of industry for raw materials obtained from plants which might prove to be new crops to diversify further the agriculture of the United States. Detailed literature surveys have been completed as well as market surveys of Simmondsia oil, candelilla wax, and domestic bamboo. As a result of the Georgia Tech contract two others were awarded this year by the Division to complete much-needed basic research on domestic bamboo. One of these, being prosecuted by the Engineering Experiment Station of Clemson College, deals with the physical properties, curing, seasoning, and preservation of domestic bamboo culms. The other contract, with the Herty Foundation Laboratory at Savannah, is for the purpose of acquiring useful information needed by the papermaking industry concerning the comparative pulp yields and natural fiber properties of domestic timber bamboos and their relation to pulping conditions and properties of pulp in papermaking.

Some of the so-called service activities of the Division are better known since these activities also aid the New Crops Projects as well. Besides handling research programs of the Division, our technical men are also concerned with much activity of the service type. Plant materials that come in must all be recorded and identified, technical botanical names appearing in all Bureau publications must all be checked, and a host of requests for materials or information must be answered. Of all the service at headquarters, the activities concerned with the international exchange of plant material are dominant. During the past

year sanitary inspection and quarantine procedures were secured for 3,887 foreign and domestic shipments involving 98,179 items, not to count the incidental distributions of ornamentals from federal stations. Formerly the bulk of shipments constituted materials being introduced into this country, but with the increase in U. S. Technical Cooperation Missions abroad there has been a tremendous boom in "reverse introduction" to foreign countries of our best strains of cultivated plants through the Division. The increase has been of such nature that addition to the staff at headquarters has had to be made to help handle it.

Much of what is being done by the Division is reflected in its current publications. Division publications of a horticultural or of an inventory type are self-explanatory. A word might be said about the policy regarding our publications or research of a more strictly botanical nature. The aim is to focus taxonomic work on plant groups of economic importance. The result is shown in current papers or manuscripts by Division research botanists on such subjects as tuber-producing solanums, drug aloes, vanilla, Arachis, and Trifolium.

Division Activity under Project b-11-5

Bureau of Plant Industry project b-11-5 (formerly called RMA b-111) is the one in the Division concerned with cooperation with Regional and Inter-Regional Projects under the National New Crops Program. Most of the activities will be reported upon by the respective regional representatives and my remarks will review the general picture as seen by the Division at Beltsville.

a) Exploration:

Under the National Cooperative Program the Division of Plant Exploration and Introduction is responsible for both foreign and domestic exploration. Since suggestions for future exploration are to be considered under item 15 of our agenda, mention will be made here only of explorations either completed since the last meeting of this committee (in 1951) or currently in progress. Four foreign explorations are involved, the sixth, seventh, eighth and ninth in the series proposed under our cooperative program. These should not be confused with other exploratory work of the Division such as that prosecuted under our cortisone or heart programs.

Exploration in Ethiopia by Dr. W. A. Archer of the Bureau, though terminated in 1951, has not been reported upon to this committee. This exploration (the sixth) resulted in approximately 1600 collections, of which about 500 were wheats and barleys of much interest to breeders. It is hoped that in the wheats some resistance to strains of wheat rust, now seriously affecting our commercial varieties, may be found. Ethiopia is in the center of an African area rich in rust resistance.

Dr. A. A. Beetle of the University of Wyoming last September completed an exploration (the seventh) in South America where he searched for hardy, drouth-resistant grasses and legumes. The first half of his work was centered in Patagonia, but he later transferred activities to northern Argentina and later Uruguay, ending his work finally in the State of Rio Grande do Sul in southern Brazil. This

exploration resulted in the introduction of some 188 genera, mostly grasses, species of Paspalum, Andropogon, Eragrostis, Stipa, Chloris, and Bromus predominating.

Dr. R. K. Godfrey, a botanist at the North Carolina State College at Raleigh, spent three months last year in Turkey searching primarily for forage plants and especially hardy, drouth-resistant wild grasses and legumes. His collections have supplemented those made a few years ago by Dr. Jack R. Harlan, who, however, collected cultivated plants entirely. Turkey is one of the main centers of origin for many domesticated plants and so it was felt worth while to attempt to get as many related wild species as possible for breeding work. The period November to March 1953 Doctor Godfrey spent in South Africa where he continued the search for wild grasses with drouth resistance and with forage value. This exploration has been terminated. Approximately 2,000 introductions were made in these two areas and these are at present being processed.

The ninth in the series of explorations was initiated last month in Cuba by Dr. Donovan S. Correll, botanist of the Division, and Dr. Julian C. Miller of the Louisiana State Agricultural Experiment Station, who is an outstanding authority on sweet-potato breeding. The object of this exploration is the investigation and introduction of sweet-potato germ plasm from the Caribbean area (especially Cuba, Puerto Rico, and the Virgin Islands), which is the center of highest variation for this important crop plant. The present field work will terminate on July 1 of this year.

One may well ask what percentage of "payoffs" are gotten through plant introductions obtained either by direct exploration or other means. This is the sort of question that Congress is prone to ask and to which appropriations may be tied and so its answer is of primary importance to the Division. To answer this question completely is one of the most difficult tasks that the Division has, for, although many introductions prove their worth in our agriculture, it is all too easy to have their original identification as a PI number lost. Since the start of the National Cooperative Program, our task has been made easier through the cooperation of our Regional coordinators who, through their regular contacts in their region, are able to actually see results and report them to us. We can not emphasize too strongly our continual need for reports on introductions that have proven of value in any way.

Since the initiation of the National Cooperative Program, about 40,000 introductions have been made through the Division. Of this total, we have learned of 165 "payoffs," introductions that have proven their value in some way or another. Actually there are probably a hundred or more additional ones that have never been reported. Thus the rate of one "payoff" introduction for every 250 brought in is probably far from exact.

b) Cotton Program:

Of the plant materials being brought in under the National Cooperative Program, only cotton and the small grains are not handled through the regional coordinators. They are handled on the national level by federal crop divisions who report their activities directly to the Division of Plant Exploration and Introduction.

During the two-year reporting period 240 introductions of Gossypium have been handled by us. Important new collections of wild diploid species including an undescribed one have been made in northwestern Mexico by Dr. H. S. Gentry of PEI. (This is a good example of how PEI attempts to utilize all its field men for the benefit of the New Crops Projects. Doctor Gentry is a field botanist working entirely on funds from our cortisone project, yet much material is collected by him for b-11-5). Since the chromosomes of the wild American diploids are homologous to one of the sets in commercial Uplands (an allotetraploid), the diploid species and their crosses are being studied intensively.

Evaluation and other studies are prosecuted by the Division of Cotton and Other Fiber Crops, BPISAE. Since their last report, the Cotton Division has established a tropical station at Iguala, Guerrero, Mexico with the cooperation of the National Cotton Council. This Station is primarily for the purpose of obtaining two crops a year, to expedite the breeding program, but it is serving a secondary purpose, for in Iguala (about 100 miles south of Mexico City) tropical introductions of the genus Gossypium from all over the world will grow, flower, and fruit. Most tropical species of cotton are perennials exhibiting short-day periodism making it impossible to mature them in the field here in the United States. The Iguala Station has been used to cross tropical cottons with commercial varieties and segregating generations are brought into this country. Within the past year, crosses have been made involving both tropical cottons with extremely coarse fiber and with types carrying nematode resistance.

c) Small Grain Cereals Program:

Like cotton, the preliminary evaluation of small grain cereal introductions (wheat, barley, rye, oats, etc.), brought in by us is handled by a federal crop division, in this case the Division of Cereal Crops and Diseases, BPISAE, which is assigned funds from PEI for the purpose of carrying out this work.

Additions to the world collections of small grain cereals were not as numerous as during the period 1949-51, approximating around 800 introductions. A major portion of these, however, originated as selective material from South American sources where nurseries had been subjected to disease infestation under natural conditions, and therefore should represent good germ plasm for possible disease resistance. The process of getting fresh seed stocks for the older introductions has been practically completed.

Considerable emphasis was placed on the screening of the world collections of wheat, barley, oats and rice, to isolate particularly those introductions which can be used in a more advanced series of disease studies. The collection of wheats was planted in Mexico, Puerto Rico and the Virgin Islands, sizable collections of oats at the Iowa and Kentucky Experiment Stations, the barley collection in North Dakota and all the rice collection in Nicaragua and two locations in Mexico.

Practically all commercial varieties released by various State Experiment Stations continue to carry germ plasm traceable to foreign parents. Landhafer and Santa Fe oats, introduced from South America in 1938 and 1945 respectively, have furnished sources of crown rust resistance and are still proving resistant to all North American races. The new Clintafe oat released by the Iowa station is an example of using Santa Fe resistance. Floriland oats, released by the Florida station, similarly used Landhafer as a parent. More recently, a good source of mildew resistance was found in the Sandhafer oat (CI 3518) introduced from Germany. Golliad barley, released by the Texas Experiment Station, has received considerable attention as a winter forage variety. Disease has been a limiting factor in developing good forage types, but use was made of the Juliaca variety introduced from North Africa to provide resistance to leaf rust and powdery mildew.

d) Financial Statement:

A discussion of finances is never popular yet in this the conclusion of the sixth year in which funds have been allocated for the National Cooperative Program a brief statement is perhaps in order.

It may be of interest, for example, to show that, as of June 30, 1953, \$915, 223 will have been spent on all New Crops Projects counting only 9b3 and Division of Plant Exploration and Introduction contributions. If contributions made by the State Experiment Stations were available to count, it would be shown that the investment in this program during the past six years has passed the million dollar mark. Of the present total, nearly two-thirds has been contributed from funds of the Division of Plant Exploration and Introduction. The Division has leaned over backwards in its support of this program for it feels that the present framework for exploration, introduction, and evaluation is the best one it has met with and, despite the inadequacies which sometimes appear, they are nothing compared with what existed prior to 1946. It is for this reason that we have even bled funds of our other projects at headquarters each year to support b-11-5 and to carry entirely without any 9b3 financial support the New Crops Project in the Northeastern Region. Although we have contributed in excess of our agreement in the past, it is not likely that we can add to our basic contributions in the future. With the perennial prospect of budgetary cuts, it is more likely that our annual contributions to the regional projects will have to be cut, to be supplemented, we hope, by the 9b3 funds which are supposed to be the ones utilized in this phase of the over-all work.

Report from Regional Project NC-7

by

M. M. Hoover, Regional Coordinator

At the time of the third meeting of the National Coordinating and Advisory Committee for New Crops Projects at Chicago on May 17-18, 1951, the New Crops Project of the North Central Region, NC-7, was three years of age. We have now completed five crop seasons and plantings have been made for the sixth crop year. It seems appropriate therefore that this occasion should be used to review the New Crops Project of the North Central Region for evidence of progress or lack of progress in order to chart more clearly the course of future work.

This report to the National Coordinating and Advisory Committee will therefore concern primarily those phases of the North Central Region NC-7 program of work that have provided greatest development since the 1951 meeting of the committee.

Annual reports giving details of operation, organization, production, and progress toward project objectives have been made regularly to the NC-7 Technical Committee, Administrative Advisers of all Regions, Directors of Experiment Stations of the North Central Region, Office of Experiment Stations, and to the Administrative Officials of the Division of Plant Exploration and Introduction. Hence, information concerning the facilities of the Primary Station at Ames and reports of progress by the several states of the North Central Region receiving NC-7 assistance will not be included in this report.

I Cooperation with the
Division of Plant Exploration and Introduction

The Division of Plant Exploration and Introduction cooperates with NC-7 by paying a portion of the salary of the Coordinator and his technical assistant, by furnishing certain office equipment and supplies, and by contributing the technical assistance of its Headquarter's Staff.

Division research project b-11-5 concerned primarily with the National New Plants program has been very helpful in supplying new plant introductions after these materials are cleared by the Inspection House. Special inventories of all plant materials received by the Division of Plant Exploration and Introduction are distributed periodically to research workers of the Region. Plant materials received in this manner comprise the major part of the plant materials increased, maintained, and distributed from annual seed lists prepared by the Primary Station.

II Cooperation with
States of the North Central Region

The research project of the Iowa Experiment Station pertaining to cooperative work with the Primary Plant Introduction Station and Regional NC-7 Project was revised recently as provided for in the original research project. The Experiment Station is initiating a new project participated in jointly by

the plant-using Departments of Horticulture, Forestry, Botany, and Agronomy (Farm Crops) for screening and testing of plant introductions available from the NC-7 Project.

Five types of cooperation between the NC-7 Project and the several State Experiment Stations of the Region have been developed:

- A. Formal State Research Projects dealing with NC-7 objectives supported in part by Regional NC-7 funds. These state projects are listed by title to show the scope of this work.

Illinois: "The Assembly, Evaluation, Seed Increase of New Introductions and Genetic Chromosomal Tester Stocks of Maize" \$2500-7/1/53

Indiana: "The Collection, Preservation, and Testing of Prunus for Cherry Leaf Spot (Coccoomyces) Resistance" \$1000 annually since 7/1/50

Kansas: "Multiplication, Preservation, and Determination of Potential Value of Forage Grasses and Legumes" \$2000 annually since 7/1/49

Kansas: "Maintenance of Viable Seed of Open-pollinated Corn Varieties" \$500 annually since 7/1/50

Minnesota: "Testing Newly Introduced Plants for Susceptibility to Disease - Wheat" \$1000 annually since 7/1/47

Minnesota: "Introduction, Preservation, and Evaluation of Stone Fruit of Probable Potential Value to the North Central Region" \$1000 annually since 7/1/50

Missouri: "Preservation of Viable Seed Stocks of Open-pollinated Varieties of Corn Adapted to Missouri and Adjoining States" \$500 annually since 7/1/52

Nebraska: "Preservation of Alfalfa Clones and Seed Stocks needed in Alfalfa Improvement" \$500 annually since 7/1/49

Nebraska: "Preservation of Viable Seed Stocks of Open-pollinated Regional Strains of Varieties of Corn" \$600 annually since 7/1/50

Nebraska: "Preservation and Preliminary Evaluation of Important Native and Introduced Grasses Considered Valuable in Improvement for Forage and Conservation Purposes" \$1200 annually since 7/1/49

North Dakota: "Preservation of Certain Physiologic Races of Flax Rust, Melampsora lini" \$500 annually since 7/1/50

North Dakota: "Preservation of Viable Seed Stocks of Open-pollinated Strains or Varieties of Corn Grown in the Northern Great Plains" \$500 annually since 7/1/49

Ohio: "Multiplication, Preservation and Determination of Potential Pear Varieties for North Central States Introduced into and Collected within the United States" \$500 annually since 7/1/49

Ohio: "The Evaluation of the Collection of Domestic and Wild Species of Tomato and the Maintenance of the Desirable Accessions and Valuable Breeding Stocks" \$1000 annually since 7/1/49

South Dakota: "The collecting, Preserving, Cataloging, Propagating, and Testing of Fruit Plants having Potential Genetic Value" \$2500 annually since 7/1/47

The Illinois project concerning Genetic Chromosomal Tester Stocks will be activated July 1, 1953, and is valuable to maize geneticists of the North Central and other Regions.

All Formal State Projects that have been receiving NC-7 assistance for one or more years are being studied by the NC-7 Executive Committee and recommendations will be made for their completion or revision to the NC-7 Technical Committee at its next meeting scheduled for Ames in August, 1953.

In addition to the Formal State Research Projects listed above, the NC-7 Project also provides Special Inventories and plant materials made available by the Division of Plant Exploration and Introduction as well as an annual seed list of plant materials as they become available from the Primary Plant Introduction Station. These Special Inventories and the annual seed list are distributed to interested research workers of the North Central Region.

B. Seed Contracts

Seed contracts for the multiplication of seed of species not well adapted to climatic conditions prevailing at the Primary Station have been arranged between the Coordinator and crop specialists at several of the State Experiment Stations. This procedure has resulted in early evaluation of accessions by specialists during the period of seed increase and also provides high-quality seed that could not have been produced at the Primary Station. The results obtained by this procedure of increasing seed by contract on a per accession basis justify the expenditure of funds used for this purpose.

C. Regional Roster of Research Workers

During the past year the Primary Station has distributed a list of plant species maintained under the NC-7 Project to all Experiment Station research workers. Each station staff member has been requested to indicate his interest in these plant materials for "breeding," "testing," or "pathology."

This list of "Workers" has been completed for the North Central Region and will be used by the Primary Station for the distribution of Special Inventories of introductions received by the Division of Plant Exploration and Introduction and the annual seed list assembled by the Primary Station. We believe that this direct contact between the Primary Station and research workers in the Experiment Stations will stimulate interest in the plant materials that are made available.

Similar "worker lists" have been compiled by the coordinators of the Northeastern, Southern, and Western Regions. The Division of Plant Exploration and Introduction plans to consolidate these Regional lists into a National Roster of research workers interested in the New Plants Program. Copies of the North Central Region list of workers are available for members of the National Coordinating and Advisory Committee.

D. Regional Catalog of Plant Stocks

One of the first regional tasks undertaken by the Primary Station was the compilation of a catalog of stocks of known performance and value maintained by research workers at the several Experiment Stations of the North Central Region. Many such stocks were known to exist throughout the Region, but no concerted effort had been made to assemble information for use by research workers.

The first Regional Catalog was assembled in 1950, but it was incomplete and did not contain plant material from all states. The first catalog is being revised and we hope to have this work completed before the next meeting of the NC-7 Technical Committee meeting scheduled for Ames in August, 1953.

E. Screening and Evaluation of New Introductions

The screening and evaluation of the new introductions is a major objective of the Regional NC-7 Project. We wish to suggest and encourage the careful consideration of this work by the National Coordinating and Advisory Committee since we believe that all Regions may profitably use suggestions for better organization and acceleration of the evaluation work in their respective screening programs.

The Technical Committee of the North Central Region believes that detailed screening and evaluation of new introductions is a research responsibility of the project workers of the several Experiment Stations, that acceptance of the plant materials should be voluntary, and that the incentive for acceptance of the plant materials by research workers is the promise that these new introductions hold as a source of germ plasm for improving presently-known varieties.

The total of more than 8000 new accessions of plants in the hands of research workers of the North Central Region for careful analysis and evaluation is impressive and demonstrates that having these materials for research study provides a regional measure of the value of the NC-7 Project.

However, several states of the region are utilizing very little of the available plant material even for crops that are of major importance within their area. Many species are available for which no states of the region appear to show need and research interest, and within the major crops for which requests have been most numerous, the selection of accessions on a voluntary basis has resulted in a scattered rather than an orderly selection of accessions for screening.

We believe that perhaps more may be done in and by some states to educate workers as to the material available and its probable value. The proposed distribution of Special Inventories and sections of the seed list to research workers may serve to stimulate interest and bring these individuals more actively into the work of screening and economic evaluation of these new introductions. Publicity of some type might be helpful, such as a Plant Introduction Newsletter of National or Regional scope concerning items of interest.

We have reason to believe that the Primary Station may greatly improve the spotty selection of accessions through closer coordination of the evaluation work among project workers in the several states.

The National Coordinating and Advisory Committee may be most helpful to all regions by considering ways and means of accelerating screening and evaluation of these plant materials.

We understand that the procedure being followed in the screening of new introductions in some regions is not on a voluntary basis as described for the North Central Region, but based on Experiment Station projects developed for the single purpose of obtaining screening and evaluation data. We believe that a full explanation of this procedure and the results obtained from it will be of use and value to the National Coordinating Committee.

III

Cooperation with Other Regions

Three types of cooperation have been developed between the North Central Region and the other Experiment Station Regions: (a) the first concerns the distribution of seed packets between the Primary Station and research co-operators living in other regions, (b) the second concerns the responsibility of Coordinators for increasing and maintaining certain crops that may be adapted to either region, and (c) the third is of a technical nature and exemplified by the program for screening wild species of tomato for common diseases as conducted by plant pathologists during the past year.

(a) It is of interest that the number of seed packets distributed by the Primary Station to other regions is approximately the same as the distribution to research workers within the North Central Region. It should be noted, however, that in inter-regional distribution of seed the Primary Station serves only as a source of seed supply and co-operators receiving such accessions are requested to make their reports of performance to the Coordinator in their respective Regions.

(b) One of the functions of the Headquarters' Staff of the Division of Plant Exploration and Introduction is the assignment of crop species to the Primary Station of the Region having climatic and soil conditions comparable to the native home of the introductions in question.

Certain introduced species of plants are known to be limited to a single region of the United States whereas other species may be well adapted to two or more regions. As production facilities became available in the Southern and Western Regions, several crop species have been assigned for increase and maintenance by agreement of the Coordinators. This division of responsibility among

the regions lessens the work of maintaining these crops of common interest and eliminated duplication of effort. Seed of accessions of such crops is freely available to research workers regardless of these arrangements concerning seed increase and maintenance.

Examples of such crop assignments are:

Southern Region - Sorghum, Capsicum, Citrullus, Cucumis melo, Solanum melongena, Ricinus

North Central Region - Zea mays, Melilotus, Medicago, Cucurbita, Cucumis sativus, Bromus

Western Region -- Carthamus, Agropyron, Dactylis

(c) The program for screening wild species of tomato for common diseases illustrates cooperative work among plant pathologists and tomato breeders that extends to all regions and Canada. During 1952 approximately 50 pathologists working with 20 common diseases screened 144 accessions of four wild tomato species and species crosses. This work is under the technical leadership of Dr. L. J. Alexander of the Wooster, Ohio, Experiment Station.

Tomato seed stocks maintained by the Primary Station were made available to cooperators and the results of the 1952 tests were summarized by Dr. Alexander. This progress report is being published in the May 15 issue of the Plant Disease Reporter for general distribution and a summary in mimeographed form is available to members of the National Coordinating and Advisory Committee.

Work with these same wild species and diseases is being repeated this year and at the close of this season a complete report of the two years' data will be printed and distributed to cooperators.

This matter is brought to the attention of the National Committee because it represents the concentration of effort by plant pathologists and plant breeders on a National scale on a crop having wide adaptation and use. This work has also brought to light sources of disease resistance not previously known and will also permit plant breeders to concentrate their future efforts on a relatively small number of accessions (approximately 20 per cent of the original number) having known genes for disease resistance rather than having to work with the entire 144 accessions of the tomato collection.

IV

Future Objectives

Major changes are not anticipated in the production and distribution program of the Primary Station. We do anticipate further adjustments between Regions in the crop species that will be maintained in the respective regions.

We believe that it is urgent that improvement be made in the screening and evaluation of newly introduced plant materials if full value of these materials is to be made readily available to research workers.

Two very different kinds of information should be obtained from these stocks:

- (a) Screening data that concerns the broad agronomic and adaptation information should be obtained rather easily and immediately, whereas
- (b) Basic research information concerning breeding performance will come to attention perhaps after years of acquaintance and use of these stocks by reasearch workers.

The intensive study of all available accessions of a crop such as that reported for the tomato seems to be a very desirable goal to strive for with many other crops. This will require the cooperation of many workers now working on different phases of the major crop improvement programs.

We believe that the National Coordinating and Advisory Committee may be most helpful in directing attention of research groups and Administrators to this very much desired and needed field of cooperation.

We believe also that ways and means should be studied to bring performance information to all research workers. Present methods of exchange of such information between workers of a given region and between regions are not adequate for the task at hand.

Careful thought should also be directed to the maintenance of accession records. We have found the maintenance of accession cards on the 8000 items now in the hands of research workers of the North Central Region to be a tremendous filing task, even with the fragmentary type of report now received from research cooperators.

This matter, like some of the other questions raised, is brought to the attention of the National Coordinating and Advisory Committee in the belief that consideration of these questions may result in modified procedures that will be of use and value to all Regions.

Report from Regional Project S-9

by

Edwin James, Regional Coordinator

Development of the Primary Station. Since the last report to the National Coordinating Committee, additional land has been acquired which now totals approximately 20 acres. With the increase in contract increase arrangements at the Primary Station, this amount permits a reasonable rotation of crops. A 5-acre portion of this area has been retired temporarily from active increase work until a satisfactory rotation and approved cultural method reduce the nematode population. Soil fumigation in the row is now being used with susceptible crops to reduce losses resulting from nematode infestation.

In addition to the land in nursery work at Experiment, additional nurseries are being used at the Georgia Coastal Plains Station at Tifton, and the U.S. Plant Introduction Garden at Savannah.

The Primary Station has improved its production facilities through the purchase of two tractors with the necessary equipment for all field operations. A new truck has also been purchased during the past year.

Irrigation equipment has been expanded so that all portions of the acreage under cultivation can now be irrigated. A new motor for pumping has recently been installed to provide for a larger sprinkling volume at any one pipe location.

Seed storage facilities have been improved through the transfer of stocks to sealed containers. Space has been gained through discarding excess seed of accessions of which a large amount was in storage and storing only a sufficient amount to meet future limited needs.

During the year of 1951 a total of 2,515 accessions was received by the Primary Station and requests totaling 5,190 were distributed in and 790 outside the Southern Region. In the 1952 period 712 accessions were received and 1,890 increased. A total of 4,103 lots of seed was sent out by the Primary Station and an additional 1,341 lots were distributed in the Region by the North Central Station, making a total distribution of 5,444 lots. Of the number shipped by the Primary Station 1,169 entered inter-regional, or the foreign exchange program under the direction of the P.E.I., leaving a total of 4,275 used in the Southern Region.

Contractual arrangements for increases and evaluations have been expanded and the coordinator has been authorized by the S-9 Technical Committee to spend up to 10% of its total allocation for such contracts. At the present time arrangements are in force for the following crops:

South Carolina	Peppers, Okra, Sesame
Texas	Sorghum, Castor beans, Andropogons
Florida	Non-hardy grasses and legumes including Axonopus, Chloris and Paspalums. Central and South American
	corns, Phaseolus species
Puerto Rico	Sub-tropical grasses, legumes and corn
Virginia	Cantaloupe

Regional Activities. All states in the Region are actively participating in the cooperative program either formally or informally. Of the 14 participating agencies, 10 states now have state supported projects. They are as follows:

Arkansas. Investigations with New Crops.
Georgia. The Introduction, Testing and Multiplication of New and Useful Plants of Potential Value for Industrial and Other Uses.
Louisiana. Introduction and Testing of New Crops.
North Carolina. New Plants Investigations.
Oklahoma. Introduction and Evaluation of New Crops for Oklahoma.
Puerto Rico. Introduction and Evaluation of New Plants for Industrial and Other Purposes and the Preservation of Germ Plasm of Economic Plants.

South Carolina. Breeding of Disease-Resistant Sesame Adapted to Mechanical Production.

Tennessee. Evaluation of New Plants.

Texas. Introduction, Multiplication, Preservation, and Determination of Potential Value of New Plants for Industrial and Other Purposes and for the Preservation of Valuable Germ Plasm of Economic Value.

As an outgrowth of a meeting of vegetable breeders at the U. S. Vegetable Breeding Laboratory at Charleston a tomato screening program for testing reactions to several diseases was initiated with plant pathologists and horticulturists in the Southern and Northeastern Regions cooperating. This activity has now been expanded on a national basis under the direction of L. J. Alexander of the Wooster, Ohio, Station.

Principal Results of Cooperative Program: Most states have realized some immediate benefits from the cooperative program. Of particular interest are those given below.

Alabama

Pepper introduction under number 152225 and 152233, tolerant to tobacco etch and tobacco mosaic.

Florida

Tomato introduction No. 129152 being used in breeding program because of immunity to gray leafspot, early blight, and phoma rot. Sweet potato numbers 153907 and 153909 form normal skin over break.

Georgia

Cantaloupe No. 177334, resistant to powdery mildew, being used in crosses on Georgia 47.

North Carolina

Watermelon accessions number 173234 and 173669 apparently resistant to downy mildew and anthracnose. Soybean No. 166147 resistant to or immune to bacterial blight.

Oklahoma

Cowpea introductions 181585 and 189536 appear resistant to fusarium wilt.

South Carolina

Introduction of Parris Island Romaine lettuce with PI No. 120695 as a parent. Chuffa No. 184939 being increased because of its superiority over commercial type. Cucumber No. 197087 immune to anthracnose; this and 7 others are being used in the breeding project.

Tennessee

Development of new blackberry derived from a cross of R. ludwigii No. 197477 on native species. Increasing Holly No. 143795 for distribution in commercial channels.

Texas

Twelve sunflower and 16 sesame introductions entering into the breeding program. Flour ryegrasses acceptable for the breeding of superior varieties and one cynodon considered a superior turf type. Buffel grass T 4464 selected from P.I.No. 153671. Three ornamentals of probable commercial value ready to enter commercial trade. One cantaloupe No. 182959 found to be drouth and downy mildew resistant.

Plans for the Coming Year. Particular attention will be directed to completing the increase and evaluation of earlier accessions which the Primary Station has not been able to increase up to the present time, owing to the small amount of seed received, lack of adaptability and disease susceptibility.

Germination tests will be run on the increases obtained during the first season of operation. Those showing a serious decrease in viability will be re-increased to provide seed of good viability for future use.

Some remodeling of the Primary Station building is needed to facilitate seed storage and handling. If possible, the seed storage room will be enlarged and insulated and refrigeration equipment installed so that all seed will be in one room conveniently located for the filling of orders.

Most outstanding introductions enter quickly into breeding programs in the various states but certain forage grasses and legumes, which appear superior at the Primary Station need further testing under a diversity of conditions. Plans are being made to put such accessions in the hands of the cooperators in the Regional Pasture and Forage Crops Project S-12 for uniform testing in the Region.

Report from Regional Project NE-9

by

J. L. Creech, Regional Coordinator

Regional Activities - NE-9 (The Discovery and Preservation of Valuable Plant Germ Plasm)

Project Activities:

- a. Distribution of introduced materials for test and evaluation.
- b. Maintenance of germ plasm stocks.
- c. Preliminary evaluations and reports.

Principal Results:

Objective a. A total of 234 new accessions was received during the period February 1, 1952 - February 1, 1953, bringing the cumulative total of accessions received to 5,226.

During the same period, 1,008 packets of seed were distributed. In addition, between February and May, 1953, 2,061 introductions were sent out for testing. This current increase is due to the fact that a listing of all accessions on hand which were not previously screened was circulated.

Objective b. All introductions received are cataloged and filed in the Regional Seed Storage which has now been in operation for the past year. At present, the storage includes new accessions received into the region, certain special materials of P.E.I. and a portion of the corn collections made by the National Research Council in Central and South America. As facilities permit, a germination test is completed for each introduction in storage and it is planned that this information will be supplied to cooperators as seed is distributed.

Objective c. Operation of the NE-9 project is largely a cooperative screening effort and examples of the manner in which this occurs will be of interest.

Cucumis melo (melon) is screened at two stations, Maryland and Pennsylvania. Each state assumes responsibility for one-half of the currently available accessions and reports individually but using the same basis for their observations. Any subsequent testing of accessions is based on the reports that are prepared by these cooperators.

This year, 200 bean accessions will be screened at Cornell, N.Y., Maine, and New Hampshire for root-rot resistance, halo-blight resistance and horticultural adaptability.

All corn accessions are initially screened at Brookhaven National Laboratories as well as increased. Further testing is based on this preliminary evaluation.

Ten states are actively participating in the screening program and this year accessions were sent to 35 investigators. In addition to the experiment stations and private research agencies, three commercial concerns are cooperating - Eastern States Farmers Exchange, Campbell Soup Company and Associated Seed Growers.

Two states have expressed a desire for regional exploration. West Virginia has already initiated a collection program of bean types which have been grown by farmers for many years and preferred to the commercial types. Over 100 accessions have been obtained, all of which will be evaluated in the region. Additional collections will be made during the coming summer. New Hampshire has requested the Division of Plant Exploration and Introduction to consider a collection in that state for clover (Trifolium repens), brome grass

and native small fruits. Many interesting clover types are growing since they were introduced by the early colonists to that state.

At the Primary Station, two new kenaf varieties were grown last year, exceeding all earlier introductions in growth, yield and fiber quality. In addition, Maryland will test this crop as a green manure at their station on the Eastern Shore of Maryland, comparing it with other materials used for green manure.

The regional project outline was revised and approved by the technical committee in May, 1952. When the Experiment Station Directors met in August, 1952, they reported that NE-9 was in an acceptable form to receive funds if available. Should certain increases in 9b3 funds occur, the project will be activated promptly.

Report from Regional Project W-6

by

L. A. Mullen, Regional Coordinator

This project was initiated officially on February 4, 1952, with the entrance on duty of a Coordinator, and this report starts of that date. The Experiment Station year is used as a reporting base.

Project Objectives: Fundamental objectives are three in number. They are: (1) maintain and distribute seed or plant stocks of accessions assigned to the P.E.I. to this region; (2) prepare and circulate evaluation reports; (3) supply personal regional contacts directed toward the general correlation of activities incident to items 1 and 2. Details of how these objectives are accomplished vary region by region within the policies and authorities of the national program.

Cooperation with Federal Project b-11-5. Without the cooperation of the Federal Project, the Regional Plant Introduction Stations could not operate. The Federal Project contributes both the initial germ plasm and money. Secondary contributions are miscellaneous supplies.

The Beltsville office paid the cost of the transfer of the Coordinator from his previous station at San Fernando, California, to Pullman, Washington. It has since paid half of his salary. Due to limited Project W-6 funds the P.E.I. also paid for travel to the meeting last fall in Ithaca, New York, and this meeting in Denver of the National Coordinating Committee.

Primary Station: Other than office space there has been no assignment of physical plant or land to the Primary Station. It is possible to utilize various small areas on college land; however, no specific area has been set aside for station use. Plans now in blue-print stage have taken to account the future office needs as well as seed processing requirements. Since no capital investments are anticipated during the current biennium, it will be at least 3 to 5 years before such facilities can materialize. The Coordinator

has plans which will absorb any amount of money up to \$80,000.00 for capital investments, including a modern greenhouse unit, storage space and other basic structures. During this first year the lack of these facilities did not pose an insurmountable problem since operational funds were so limited. The financial situation is expected to improve after July, and operations expand accordingly. Much of the first year was spent in getting organized and meeting people at the various cooperating stations. A great deal of effort went into the working for support of the project, and in indoctrinating the cooperators. A small increase block will be planted in May. A few lines had to be started in the greenhouse. Many lines will be increased by states as a contribution this year to the regional project.

During the year 1,310 accessions came in from the Beltsville office, and about 500 were salvaged from lots distributed prior to 1952 but not used. Other regions supplied approximately 1,000 items to cooperators in the Western Region. Packets sent out numbered 1,576. Distribution by states is most uneven.

Items requested for maintenance by W-6 include beans, peas, peppers, safflower, both evergreen and deciduous trees and shrubs and certain forage species.

Cooperation with States: Because of the very limited regional budget it was necessary to ask those states which could to do some gratis evaluation and propagation as a contribution to W-6 during this current growing season. Washington state has agreed to increase the 107 safflower lines now held in the Introduction Station Inventory. This will be done without charge. The state also made a nice contribution last December in paying the travel expenses and per diem of Dr. Hoover so that he could attend our Technical Conference and discuss his experience in the operation of NC-7. His very fine presentation was of material help to the Western project.

Idaho has agreed to increase the bean lines, of which there are some 700, at their Twin Falls Station. This, too, will be a gratis job. New Mexico has agreed to propagate several lines of beans and chick peas. Some pepper and miscellaneous propagation will be carried on in California; however, by commercial interests and not by Experiment Stations.

The Soil Conservation Nurseries will return performance information and seed of some 60 grass and legume accessions which they are testing in their program. At Pullman the nursery has made available a room in the cold storage building for storage of seed. This has provided ample space for the first one and one-half years. The 1953 increase lots will severely tax available facilities if the present plan of using pint and quart jars is followed.

Report of Regional Projects: New Mexico was the only state receiving W-6 funds for this type of work. During the year they received \$1500 out of a total budget of \$6400 to do work on the evaluation of native oil-producing plants. This project terminated as of the current year according to a decision reached at the December meeting. No further regional projects are contemplated until the Primary Station is on a firmer footing.

Application of Results: It is premature to say what, if any, will be the practical application of results so far obtained. The New Mexico work did bring up some points of interest. However, they will have to be more thoroughly evaluated under some formal research project before extent of application can be determined. No work was done at any other station which will have immediate application to agriculture or industry.

Work Plans: There are 5 major objectives for the coming year:

1. An intensive educational program must be carried on. There are all levels and degrees of understanding and interest.
2. Full use will be made of the contracting privilege granted by the Technical Committee at the meeting in December.
3. A strong effort will be made to accumulate an adequate physical plant and an assignment of long tenure land.
4. Give effective service to cooperating stations in regard to supplies of seed, plants and information.
5. Process as many accessions as facilities, labor and time permit.

In addition to these major objectives, it is intended that a system of standard evaluation forms be developed and that a complete and accurate listing of investigators be compiled.

Report from the Inter-Regional Potato Introduction
and Preservation Project IR-1

by

R. W. Hougas, Coordinator

Objective: The major objective of the Inter-Regional Potato Introduction Project is to promote and facilitate the improvement of the cultivated potato by providing a readily available reservoir of *Solanum* germ plasm. Stocks carrying characters of economic importance (i.e., resistance to diseases and insects, superior horticultural characteristics including quality, yield and adaptability) are of primary interest.

Stocks on Hand: The present collection includes more than 2100 clones and seed lots. Forty-nine of the known tuber-bearing *Solanums* are now represented.

Resistance and immunity to many of the important potato diseases including late blight, scab, X-virus, Y-virus and verticillium wilt have been found in certain stocks of the collection. High resistance to several of the potato insects such as flea beetles, leafhoppers and aphids has also been found. Three selections which are reported to be highly resistant to the golden nematode have just been received. About 200 species hybrids, involving several of the wild species carrying desirable economic characters not found in the cultivated potato, are now on hand. Detailed and specific

information concerning the stocks on hand is listed in the annual progress report for 1952 and the current listing of Solanum seeds and tubers available for distribution.

Increase and Distribution: The increase of stocks has been greatly facilitated by the completion of the physical plant during the past year. Seed and tuber increase of several introductions, difficult or impossible to obtain in the field, is now being obtained with relative ease under glass. Greenhouse propagation of stocks provides, in addition, effective insurance against loss to disease and other hazards of the field.

Shipments were made to 13 states and 10 foreign countries in 1952. Requests for stocks in 1953 have been accelerated due largely to the increase in the number of stocks listed as available in the current Solanum inventory.

Maintenance: It is essential that many Solanum introductions, such as varieties and improved breeding stocks, be maintained on clonal lines. Some introductions, particularly those that are relatively unevaluated, can be advantageously maintained as true seed especially since maintenance of a Solanum introduction as seed is more economical than as a clonal line. In accordance with the recommendation of the IR-1 Technical Committee, a program of self and sib-mating has been undertaken in an effort to maintain as many introductions as is feasible in the seed form.

Evaluation: The task of evaluating new introductions is a formidable one. A thorough job of evaluation can be accomplished only through cooperation of the technical workers in several fields of potato investigation. The progress in the evaluation of Solanum introduction has been very encouraging and can be best measured by the information summarized in the current annual report and Solanum inventory.

Physical Plant: The present physical plant consists of a 28' x 80' greenhouse, 28' x 35' potato storage, office and laboratory space at Sturgeon Bay and Madison, machine and equipment storage and 4-5 acres of land in proper rotation for potato culture. The major portion of field, greenhouse, laboratory, office and transportation equipment has been provided.

Dr. Krantz supplemented the report given by Dr. Hougas by reviewing the background of the establishment of the project and discussed future developmental plans. He also transmitted a resolution passed at the last meeting of the Technical Committee for Project IR-1 which reads as follows:

"The Technical Committee for the Inter-Regional Potato Introduction Project (IR-1) has noted with much interest and satisfaction the recent appearance of Correll's monograph on the tuber producing Solanums of North America and Central America. In view of the value of this contribution to all phases of potato breeding, it is hereby strongly recommended by this committee that the taxonomic studies already started be continued so as to advance our knowledge of tuber producing Solanums especially those of South America. It is urged that adequate funds be made available for carrying out necessary exploration and taxonomic studies."

The Secretary was instructed to include the resolution in the Minutes of the National Committee.

Report of the Sub-committee on Publicity and Publication

The report of this sub-committee was presented by D. C. Smith for I. J. Johnson, formerly chairman of the NC-7 technical committee. A brief review of the establishment of this sub-committee was presented.

Action was taken on the 1951 meeting of the National Coordinating and Advisory Committee to establish a standing sub-committee for publicity and publication. This was to consist of the chairman of the regional technical committees and the coordinators of the four regions. Dr. I. J. Johnson was named as chairman.

Reference was made to the action taken by the North Central Directors at the April 1952 meeting when a sub-committee presented a standard type format for publishing results. Recognition was given to the desirability of progress and preliminary reports and publication of regional bulletins when work was reasonably completed.

The Directors also indicated that the Regional Technical Committee should function to make arrangements for the preparation of regional publications and to recommend the nature and type of such publications.

It was indicated that no definite proposals concerning publication and publicity had been developed by the sub-committee. Attention was directed toward the forthcoming report of results of evaluating tomato stocks by the Ohio and other experiment stations as an example of the type of publication and publicity problems involved in the project.

Doctor Hodge submitted a list of various publications which have come out of the cooperative program. These are given on the following pages.

Doctor Smith was appointed by Chairman Lewis to head the standing sub-committee on Publicity and Publication to take the place of Dr. I. J. Johnson. The members of the sub-committee will remain the same, i.e., the Chairman of the technical committees, the Regional Coordinators, and the leader of the federal project b-11-5.

Publications Related to the National Cooperative Program Appearing during
the Period - 1952-1953

BPISAE Project b-11-5:

Plant material introduced by the Division of Plant Exploration and
Introduction, U.S.D.A. Paul G. Russell

Plant Inventory, No. 153 - Sept. 1952.
" " " 154 - Nov. 1952.

Special Inventory No. 32 (Processed -
April 15, 1952.
" " No. 33 (Processed -
July 15, 1952.
" " No. 34 (Processed -
Oct. 15, 1952.
" " No. 35 (Processed -
Nov. 15, 1952.

Section Tuberarium of the genus Solanum of North America and Central
America, D. S. Correll. USDA Agric. Monogr. No. 11, May, 1952.

Tree and Shrub Species for the Northern Great Plains.
Ernest J. George
USDA Cir. 912, Jan. 1953
(Reports on evaluation of some 200 species
introduced by PEI)

A Report on the Patagonian Range. A. A. Beetle
Wyoming Range Management
(Mimeographed) Issue No. 47
Laramie, May 1952.

A Check List of South American Grasses Collected by A. A. Beetle.
Laramie, Wyoming
Mimeographed.

The Poppcorns of Turkey. Edgar Anderson and William L. Brown.
Ann. No. Bot. Gard. 40 (1953) 33-48.
(data on 54 introductions collected in
1948 by Dr. Harlan and evaluated in
the NC-7 region).

Men Search the Earth's Corners for Newer and Tougher Plants.
Pathfinder Magazine, Oct. 22, 1952.

They also Bring 'Em Back Alive. James Nevin Miller.
Nature Magazine 46 (Jan. 1953) p. 37.

Inter-Regional Potato Introduction Project IR-1:

Annual Report, IR-1, Inter-Regional Potato Introduction Station.
Mimeographed.

1952 Seed and Tuber List - Solanum species. Feb. 1953.
(Includes preliminary reports on evaluation) Mimeographed.

Recent Foreign Literature on Potato Research. R. W. Hougas and H. S.
Swaminathan. Jan. 1953. Mimeographed.

The Inter-Regional Potato Introduction and Preservation Project.
R. W. Hougas. House Organ of the Amer. Pot.
Growers Association.

Regional Project NC-7:

Seed Lists for 1952 of plant materials available for distribution by
the Primary Station, Ames, Iowa. Mimeographed.

Progress Report of National Screening Committee for Disease Resistance.
L. J. Alexander and Max M. Hoover. Mimeographed.

Crop investigators of the North Central Region. May, 1953. Mimeographed.

Regional Project NE-9:

Annual Report, Feb. 1, 1952 to Feb. 1, 1953, Project NE-9. Mimeographed.

Report on Foreign Cantaloupe Introduction by F. C. Stark at College Park,
Md. NE-9 Coordinator's Report. Mimeographed.

Evaluations on Field Corn by O. H. Pearson at Georgetown, Delaware. 1952.
NE-9 Coordinator's Report. Mimeographed.

Evaluations on Carrots by O. H. Pearson at Feeding Hills, Mass., 1952.
NE-9 Coordinator's Report. Mimeographed.

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William Ackerman. Processed.

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Facilities for National Seed Storage

Dr. D. W. Robertson, chairman of the standing sub-committee on National Seed Storage, reviewed the activities of his committee since its appointment in February, 1950. The minutes of the National Committee Meetings of 1950 and 1951 cover in detail the need, objectives and tentative plans for a national facility to permanently maintain germ-plasm as seed. During the past two years Doctor Robertson and his committee have aroused the interest of many scientific and commercial groups in the need for a national facility. Resolutions, recommendations and personal letters have come to the U. S. Department of Agriculture urging the establishment of such a laboratory. As a result of the committee's activities, the Division of Plant Exploration and Introduction was instructed to prepare a project justification for the federal construction of a national seed storage laboratory. In the project statement submitted by the Bureau of Plant Industry, Soils, and Agriculturing Engineering, it was estimated that the cost of construction, including engineering plans, would be \$350,000. The cost of staff and operations was estimated at \$75,000 per year. Although the project received favorable consideration for fiscal year 1953-54, budgetary limitations did not allow its submission to Congress. The project will be proposed for consideration in succeeding years.

In the discussion which followed, it was evident that the committee as a whole felt a commendable job had been done by Doctor Robertson's group and that these activities should be continued.

It was moved by Doctor Howlett, and unanimously carried, that "the standing sub-committee be instructed to prepare a statement which might encourage more organizations to get behind the establishment of a national seed storage facility."

The sub-committee has in its membership K. S. Quisenberry, H. R. Albrecht, J. R. Quinby, E. H. Toole and Dr. Robertson. It was considered probable that some of these might wish to be relieved of duties connected with the sub-committee. Dr. Robertson was asked by the chair to continue in his present capacity. Dr. Howlett was appointed as a member. Other members will be appointed by Chairman Lewis after consultation.

Federal and State Quarantines in Relation to
the New Crops Program

In the course of the various technical committee meetings, as well as at meetings of the National Committee, questions have come up in relation to the inspection and quarantine of living plant material from abroad or between States. Under this cooperative program, such matters are handled as routine by the Division of Plant Exploration and Introduction in cooperation with the Division of Plant Quarantines of the Bureau of Entomology and Plant Quarantine. Nevertheless, a clear understanding of the prohibitions and restrictions is necessary because often quarantine procedures greatly extend the interval of time between introduction and availability to the grower. Often needless irritation arises because of lack of understanding as to the need for quarantine restrictions.

Mr. E. Kostal, in charge of Post Entry Quarantine and a staff member of long experience in quarantine matters as they pertain to the federal government, attended the Denver meeting. He demonstrated that practically everything which comes into the cooperative plant introduction program is covered by the broad coverage of Quarantine Regulation No. 37. Plant materials for research purposes, although rigidly examined for diseases and pests, are given priority in entry to the country. Because of the quarantine facilities made available by the Division of Plant Exploration and Introduction at Glenn Dale, Md., many plants which otherwise are strictly prohibited may come in for research purposes. The several States may develop their own quarantine regulations for the protection of crops within their boundaries. Such regulations, in all cases, are respected by the federal government. However, the States may not make regulations which would make federal control ineffective. Both Federal and State inspectors are available across the country to assist and advise shippers of plant material to protect our agricultural crops from the spread of disease and pests under the many quarantine regulations.

After some discussion and illustration by specific examples, Mr. Kostal was warmly thanked by the Committee for his kindness in attending the meeting and discussing quarantine problems.

Specialization by Regions in the Handling of Specific Crops

It is obvious that one or the other of the four cooperative regions is far better suited for the increase and evaluation of certain kinds of crops than are other regions, although these crops may be planted to some extent in several of the regions. As the years have gone by in our cooperative program, arrangements have been made between coordinators that certain crop materials, as they are introduced, will all go to one of the regions best suited and that the increase in seed stocks and preliminary evaluation be taken care of in that region and later distributed as seed packets to the other regions for trial. In the report given above by the North Central Region, some of the crops handled in this way are mentioned.

With this type of specialization as a beginning, a further step has taken place where arrangements for the advanced evaluation of all introductions in a specific crop have been given to one region to make all arrangements for coordination on a national level. A specific example of this is the testing of resistance to a series of tomato introductions as operated in the North Central Region under the technical leadership of Dr. L. J. Alexander at Wooster, Ohio, ably assisted wherever possible by our regional coordinator, Dr. M. M. Hoover, through his Regional Primary Station at Ames, Iowa.

It was the general consensus that, wherever it appeared good for this type of specialization to take place and if general agreement could be obtained by the four coordinators of the regions, more of this type of specialized national coordination should be encouraged. Our cooperative introduction program in this way can serve as a means of bringing specialists in a particular crop together to undertake a well planned screening program where such coordina-

tion would not otherwise take place. Many crop specialists are at present very loosely tied together and are not aware of the interests of their colleagues across the country. It may well be that in certain crops the best center for such coordination will fall under the leadership of one of the crop divisions of the federal Bureau of Plant Industry, Soils, and Agricultural Engineering. For other crops, it may be far better to handle them from one or the other of the state experiment stations or through our regional introduction stations.

REPORT OF COMMITTEE ASSIGNED BY CHAIRMAN LEWIS
TO PREPARE A LIST OF QUALIFICATIONS FOR MEMBERSHIP
ON REGIONAL TECHNICAL COMMITTEES

Following some discussion as to the need for high calibre men on the four Technical Committees, the Coordinators were requested by Chairman Lewis to prepare a list of qualifications which it would be desirable for Committee members to have. The assignment was completed that evening and reported the next day.

The report was given by L. A. Mullen, Coordinator for the Western Region. The following is a list of qualifications as presented on May 13:

1. He should have participating interest in the program.
2. He must have the respect of fellow workers and the confidence of his Director.
3. He must have time to participate, and preferably not be a full-time administrator.
4. He should represent a major crop interest.
5. He should preferably have organization ability.
6. He should have professional stature and experience.

The Coordinators were of the opinion that it was in order for them to suggest, through their Administrative Adviser, changes in Technical Committee representation when such changes would be to the advantage of the regional projects as well as to the Director and the staff members represented. The present Technical Committee personnel of the four cooperative regions were rated on their apparent ability to represent their respective experiment stations in all fields, using the above qualifications as a basis. Somewhat over a third were considered good. This rating in no wise reflects upon the scholastic or research abilities of the men, but indicates that some improvement could be made on the part of the Director in choosing good representatives.

They were also rated on the basis of subject matter represented. The general fields of Agronomy, Horticulture, and Pathology were used. On this basis the rating is as follows:

Region	Agronomists	Horticulturists	Pathologists
NE	2	10	0
NC	9	3	0
S	10	4	0
W	11	1	0

It is understood that a member of the Technical Committee, whatever his own specialty might be, represents all the plant research fields supported by his institution. On the other hand, a given Technical Committee might function most effectively when its composition reflects the major research interests of the region it represents.

Significant Results Arising From The National Cooperative Program

In discussions of progress from the various projects, it was obvious that a rather extensive series of plant introductions were beginning to show value for breeding programs. Doctor Hodge, with the help of the Regional Coordinators, was requested to prepare a list of these significant items for general circulation in the cooperating States and other agencies. As it will take some time to bring this material together, the list will not be a part of these minutes.

Lag in Availability of Stocks Listed in Plant Inventories

During the past five years, it has been routine procedure by the Division of Plant Exploration and Introduction to issue special mimeographed inventories of newly introduced plant material as quickly as the material comes to hand. This gives the plant worker an opportunity to request what he finds of interest, and in turn gives those who must propagate stocks an idea of how much may be needed.

There have been scattered complaints from cooperators over the lag between the time something is requested and when it is actually made available. Mr. Erlanson covered some of the main problems causing these lags in time. Briefly enumerated, the main points were:

1. Build-up of seed stock because original introduction was too small to distribute.
2. Many introductions must go into special quarantine before release. Quarantine may last one to two years.
3. Most deciduous fruits and shade trees must be held in post-quarantine for several years before distribution.
4. Some introductions listed are for special federal programs and are not made available to cooperators at all except by special arrangement.

It may be better not to give the P.E.I. Inventory the wide distribution it now receives, because in reality it is not a check list for materials immediately available but rather an historical record for reference purposes. Perhaps it would be better to develop better seed lists and plant lists of the type distributed from the Regional Primary Stations which give only material immediately available.

After some discussion, no definite recommendations were made by the Committee. It was felt that it was an operational matter to be worked out between the Division and the Regional Coordinators.

Progress in Revision of Regional Projects
and State Supporting Projects

Chairman Lewis requested a review as to the status of both Regional and State supported projects working in cooperation under the national program. The following was reported:

NC-7 - North Central Region

The regional project statement goes back to 1948 but remains a model upon which other regional project statements have been based. Nine of the twelve States of the North Central Region have formal subprojects which are supported by regional as well as State funds. All projects are at present under detailed review of the technical committee for the region.

W-6 - Western Region

The regional project statement was revised in May, 1953. There are no formal subprojects, but several States have expressed an interest in preparing projects which will be State supporting.

NE-9 - Northeastern Region

A revised regional project statement was approved in August, 1952. Regional cooperation has not yet been formally activated, but all groundwork has been done. The region may receive funds in fiscal year 1953-54. There are no formal subprojects.

S-9 - Southern Region

The regional project statement was revised in February, 1949. There is no need for further revision at present. All States of the region are participating to some extent, and ten States, including Puerto Rico, have formal subprojects supported entirely from State funds.

IR-1 - Inter-Regional Potato Project

The last revision of the project outline was in 1951. The statement is satisfactory for the present. There are no subprojects under the inter-regional project.

It was the consensus of the committee that the States of the Southern Region be commended for the organization of their work in State-supported subprojects without assistance from regional funds. Also, under formal subprojects of the type prepared in that region, reporting of progress for the State follows a simple pattern familiar to project leaders.

Maize Project of the National Research Council

Two years ago the National Research Council requested a sum of money from the Technical Cooperation Administration of the Federal Government to support a project for the collection and maintenance of aboriginal races of maize in the Western Hemisphere. Funds were granted, and three centers of activity were established to carry out the work. Mr. Erlanson, a member of the National Research Council's Committee for this project, gave a short report of the progress of the project because of its close relationship to work under our program.

Three seed centers have been established, at Mexico City, Mexico, Medellin, Colombia, and Piricicaba, Brazil. The Mexico City Center will receive collections made in Mexico, the West Indies and Central America. The Medellin, Colombia, Center will receive collections from western South America including the Andes. And the Piricicaba, Brazil, Center will receive collections from the remaining area of South America. There have been various collectors working on this project and already some 6,000 collections of maize have been received by the three Centers. The Centers will catalogue and describe their material and the National Research Council will distribute eventually descriptive inventories of stocks available to research workers through these Centers.

As a safeguard, the Division of Plant Exploration and Introduction has agreed to receive and store a 5-ounce sample of each of the collections made under this project. The safeguard collection held in this country is purely a reserve bank and is not subject to requests for seed. Only the Centers mentioned above will furnish seed.

It is not known at present if a continuing sum to maintain the Centers through the years will be made available.

Future Plant Exploration

The responsibility for plant exploration lies with the Division of Plant Exploration and Introduction. How much exploration can be done during any fiscal year is governed by funds made available to the Division which may be used for this purpose. However, the objectives of any exploration and the area to be covered are subject to the advice of the cooperating States and other agencies who may instruct their representatives on the National Coordinating Committee as to their wishes.

The following proposals were brought forward for consideration:

1. Exploration for sweetpotato breeding stock in the Caribbean area.
2. Exploration for forage and soil-improving crops for the South.
3. Exploration for grasses and legumes in southwestern United States and Mexico.
4. Exploration for tobacco breeding stock which might have resistance to "wide leaf root-knot."

5. Continued exploration for grasses and legumes in the central Great Plains.
6. Exploration in the northeastern United States for better blueberry stocks, endemic races of white clover, alfalfa and timothy.
7. Exploration for endemic races of beans in West Virginia and adjacent area.
8. Exploration for grasses, legumes, and woody ornamentals in northwestern United States and adjacent Canada.
9. Exploration for grasses and legumes, deciduous fruits and other crops in the Middle East and southern Asia.
10. Continued exploration for potatoes in Andean South America for breeding stocks and systematic clarification of wild species.

Obviously, all of these can not be supported from funds in any one fiscal year. Division representatives suggested that during the coming year most of the proposals for domestic explorations could be satisfied in part at least and perhaps one foreign exploration could be started. It was pointed out that the first phase of the sweetpotato exploration was already under way and that later phases would be carried out as soon as present collections could be absorbed by breeders.

The views of the Division received general acceptance by the Committee and no specific proposals were placed to vote as to priority. It is presumed, therefore, that the Division will use its available funds to subsidize domestic exploration in all fields proposed where State cooperation can be secured. The Division will also give serious consideration during the coming fiscal year to that area of Asia still accessible to exploration where many valuable breeding stocks are known to occur, i.e., the Middle East, from Iraq through western India.

Next Meeting of National Coordinating Committee

It was considered unlikely that enough material would come up to warrant the calling of another meeting of the National Committee in a year's time. At the suggestion of Chairman Lewis, the Committee went on record that the next meeting will be called in 1955, the exact time and place being left to the discretion of the Executive Committee. Decision as to calling a meeting earlier than 1955 is left to the discretion of the Chairman.

Election of Officers

A committee composed of Buchanan (chairman), Sell, Creech and Howlett, was appointed by the Chair to consider nominations for Chairman and Secretary

of the National Committee. The nominating committee moved that the present officers be continued in office through the next meeting in 1955. By unanimous vote, Chairman Lewis and Secretary Erlanson were continued in office.

The meeting adjourned Wednesday noon, May 13, 1953.